

The Massachusetts Agricultural
College

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THE
MASSACHUSETTS
AGRICULTURAL COLLEGE

A DESCRIPTIVE AND
HISTORICAL SKETCH

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THE AGRICULTURAL COLLEGE.

HISTORICAL NOTES—PRESENT CONDITIONS—THE EXPERIMENT STATIONS—A GLANCE AT THE BUILDINGS.

THE Massachusetts Agricultural College was one of the first institutions of its kind to be founded in the United States. By an act passed July, 1862, Congress granted to each State a portion of the public lands, the money from the sale of which, it was provided, should go toward establishing and maintaining at least one college where "the leading object shall be, without excluding other scientific studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The State legislature formally accepted this grant April 18, 1863, and afterward set aside one-third of it for the Massachusetts Institute of Technology at Boston. The trustees for the Massachusetts Agricultural College were incorporated by an act of April 29, 1863, and they found their share of the Congressional grant to be 360,000 acres of land, which afterward yielded \$146,000. The corporation organized with Governor Andrew as president, A. W. Dodge, Esq., vice-president, and Charles L. Flint, secretary; but in 1864 the legislature changed the legal name of the institution to the Massachusetts Agricultural College, and Hon. Henry E. French of Cambridge was elected president, the Governor remaining an *ex-officio* member of the board of trustees. The question of the location of the College provoked much discussion among the parties interested. The decision came when the town of Amherst promised \$50,000, and sufficient land at a reasonable rate, the trustees accepting the offer May 25, 1864, and the Governor and Council approving the choice soon after. The present estate of the College — 383½ acres — was then purchased at a cost, including the buildings then standing, of about \$43,000. The erection of the first college buildings was authorized by the trustees May 26, 1866. In this year President French resigned, and was succeeded by the Hon. Paul A. Chadbourne, who in his turn retired the following year because of ill

BOSTON UNIVERSITY
COLLEGE OF LIBERAL ARTS
LIBRARY

health. The work of the trustees up to this time had been simply preparatory to the opening of the College, and, therefore, the list of actual presidents may be said to commence with President Clark, who succeeded President Chadbourne. The terms of office of the presidents were as follows : —

Colonel William S. Clark, Ph.D., LL.D.....	1867-1877
Charles Louis Flint, A.M., LL.B.....	1879-1880
Hon. Levi Stockbridge.....	1880-1882
Hon. Paul Ansel Chadbourne.....(Second Term)	1882-1883
James Carruthers Greenough, M.A.....	1883-1886

President Henry Hill Goodell was the acting president during six months of 1883, and in July, 1886, was elected to the position which he still holds.

The College was opened for students October 2, 1867, the entering class numbering thirty-three. The instructors numbered four. Before the close of the term there were fourteen more students.

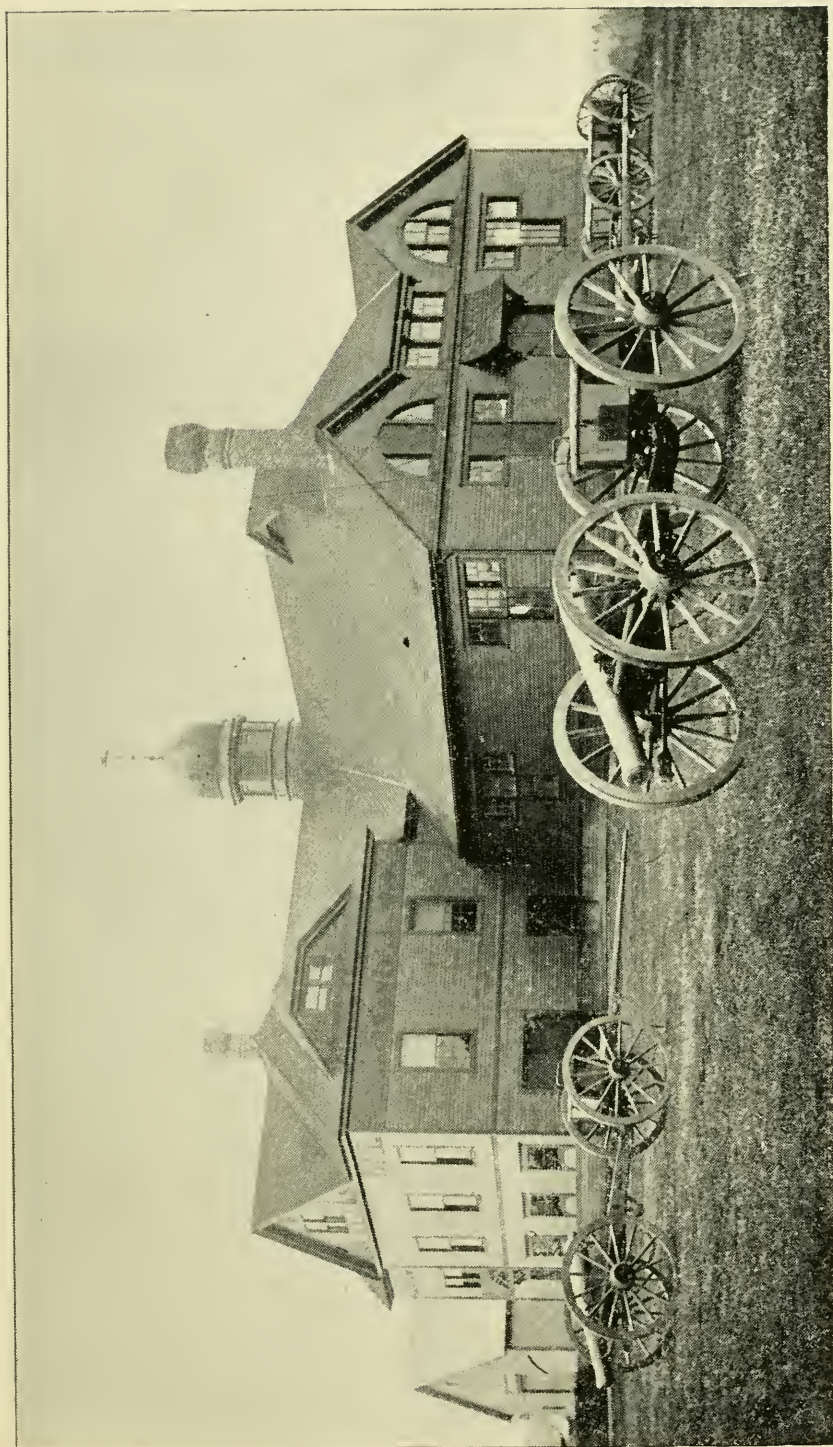
The faculty comprised, in 1891, twelve members exclusive of the president. This body has the general direction of the College in matters relating to the curriculum and to discipline.

The State Board of Agriculture constitutes a board of overseers of the College, and through their special committees make frequent examinations of the work and condition of the institution. Their annual reports are submitted to the legislature, and are published as public documents.

The degree of Bachelor of Science is awarded to successful graduates, the governor of the Commonwealth signing the diploma. By a special arrangement between the authorities of the College and the Boston University, the former has become the Agricultural Department of the University, and receives its students in that science. Students of the Agricultural are permitted to matriculate with the University, and on graduation may receive its degree of Bachelor of Science, in addition to that of the College, thus obtaining the privileges of alumni in both institutions. A military diploma is granted at the discretion of the professor of military science and tactics.

The course of study at the College is entirely prescribed, and is largely scientific in its nature. There are ample provisions, however, for the study of literature and the languages.

Generous financial aids are offered to students who wish to obtain an



education at a small expense. As nearly all the scholarship funds of the College have been established by the legislature, students coming from homes within Massachusetts are favored before those from other States. In addition to the following specified sums, \$5000 is devoted each year to the payment of those who perform work in the various departments. About \$120 is given annually in prizes. The scholarships are: eighty State scholarships, established by the legislature of 1886, \$10,000; fourteen Congressional, established by the trustees, \$1120; private bequests (the income of \$3000) amounting to \$150. Application for one of the State scholarships is made to the State senator of the district in which the student resides; and for a Congressional scholarship, to the representative to Congress.

The necessary expenditures of a student in college are estimated as closely as possible in the accompanying table. It is assumed in these that the student actually pays for each item, any beneficiary money which may be credited to him by the College, or any other means which may be adopted to reduce the cost of an education, not being taken into consideration. It is believed that the estimate in the "Least" column may be followed without injurious deprivation of any kind. The students are required to room in the college dormitories, and with a room-mate; the items of rent, furniture, fuel, and light are reduced by being shared. The actual cost of these items to each student is therefore entered in the estimates. In the rent of the higher-priced rooms, steam heat is included.

	LEAST.	MODERATE.	AMPLE.
Tuition	\$80.00	\$80.00	\$80.00
Books and Stationery	8.00	12.00	20.00
Room Rent	24.00	36.00	48.00
Furniture (annual average)	8.00	15.00	25.00
Board	90.00	108.00	126.00
Fuel and Light	11.00	15.00	25.00
Washing	10.00	15.00	25.00
Clothing	30.00	60.00	100.00
*Military Suit	(15.75)	(15.75)	(15.75)
Society and Class Taxes	3.00	8.00	15.00
Subscriptions	—	5.00	10.00
Sundries	15.00	25.00	40.00
Boston University Course	—	10.00	10.00
*Laboratory Fee	(30.00)	(30.00)	(30.00)
Totals	\$279.00	\$389.00	\$524.00

* Each of these items occur only once during the college course, and are not included in the totals.

The military department of the College is under the direction of an officer of the United States army, detailed to the position by the Secretary of War. Instruction in military drill tactics is made one of the requirements of the College by the act of Congress providing for the establishment of the institution. Each student, not physically incapacitated, is thus under the surveillance of the commandant. The cadet battalion, organized with four companies, is officered by the students of the upper classes; and the drills are held three times each week. Recitations upon the tactics and the art of war, and practical instruction in target, artillery, and mortar practice are features of the department. During the sessions of the College, the rooms of all the students are inspected once a week by the commandant. Most of the arms and ammunition used in the battalion are provided by the United States. The military diploma, awarded by the commandant at the satisfactory completion of the college course, recommends the receiver to an office if volunteer troops are ever called for by the State authorities.

Connected with the Agricultural College in their aims, yet distinct in organization and work, are the State Agricultural Experiment Station and the Hatch Experiment Station. These are so nicely arranged that they supplement each other in their experiments, neither one attempting the same line of investigations as the other, although in several instances the same person is in charge of similar departments in the College and in both of the stations. This plan lessens the necessary expenses, and increases the funds available in every department of experiment, resulting in unusually large returns in proportion to the outlay. The organizations of the two departments are here given.

The Massachusetts **State Agricultural Experiment Station** was established in 1882, by an act of the legislature, passed May 12 of that year. The Station was located at the State Agricultural College, forty-eight acres of land being leased from the College, and its management was vested in a board of control of seven members, the governor of the Commonwealth being president *ex officio*. The sum of \$3000 was first appropriated for equipping the new station, and \$5000 a year thereafter granted for its maintenance. This annual grant was increased in 1885 to \$10,000. The objects of the investigations of the Station were fully set forth in the original act as follows: "The causes, prevention, and remedies of the diseases of domestic animals, plants, and trees. The



history and habits of insects destructive to vegetation, and the means of abating them. The manufacture and composition of both foreign and domestic fertilizers, their several values, and their adaptability to different crops and soils. The values, under all conditions, as food, for all farm animals, for various purposes, of the several forage, grain, and root crops. The comparative value of green and dry forage, and the cost of producing and reserving it in the best condition. The adulteration of any articles of food intended for use of men or animals; and in any other subjects which may be deemed advantageous to the agriculture and horticulture of the Commonwealth."

After the organization of the Board of Control of the Experiment Station, Charles A. Goessmann, Ph.D., LL.D., was elected director and chemist, which positions he has held ever since. The director has six trained assistants in the chemical work and one in the field. The membership of the Board of Control was increased in 1888 to eleven. They are elected for terms of years,—two from the members of the State Board of Agriculture, two from the Board of Trustees of the State Agricultural College, one from the Massachusetts Society for promoting Agriculture, one from the Massachusetts State Grange, and one from the Massachusetts Horticultural Society, appointed by the respective organizations, and the president of the State Agricultural College, the director of the Station, and the secretary of the State Board of Agriculture. This Board of Control submits to the legislature, through the director of the Station, an annual report of its investigations, twenty-five thousand copies of which have been printed each year since 1889. The Station also issues occasional bulletins of ten thousand copies each, and monthly statements of official analyses of commercial fertilizers during the months of April and October of every year.

The work at the Experiment Station is limited only by the amount of money available. Each new source of revenue opens a corresponding channel of investigation. The annual income amounts to \$16,500, of which \$10,000 is received from the State, \$5000 from the Hatch Experiment Station in return for doing the entire chemical work of that institution, and about \$1500 from certificates issued to dealers in commercial fertilizers as required by law.

The grounds of the State Experiment Station are leased from the Agricultural College, at merely nominal rental, for a period of ninety-nine years, and comprise forty-eight and one-half acres, of which ten

are woodland. Seventeen and three-quarters acres are on the west side of the county highway, and thirty and a half on the east side.

The buildings of the Station are valued as follows : —

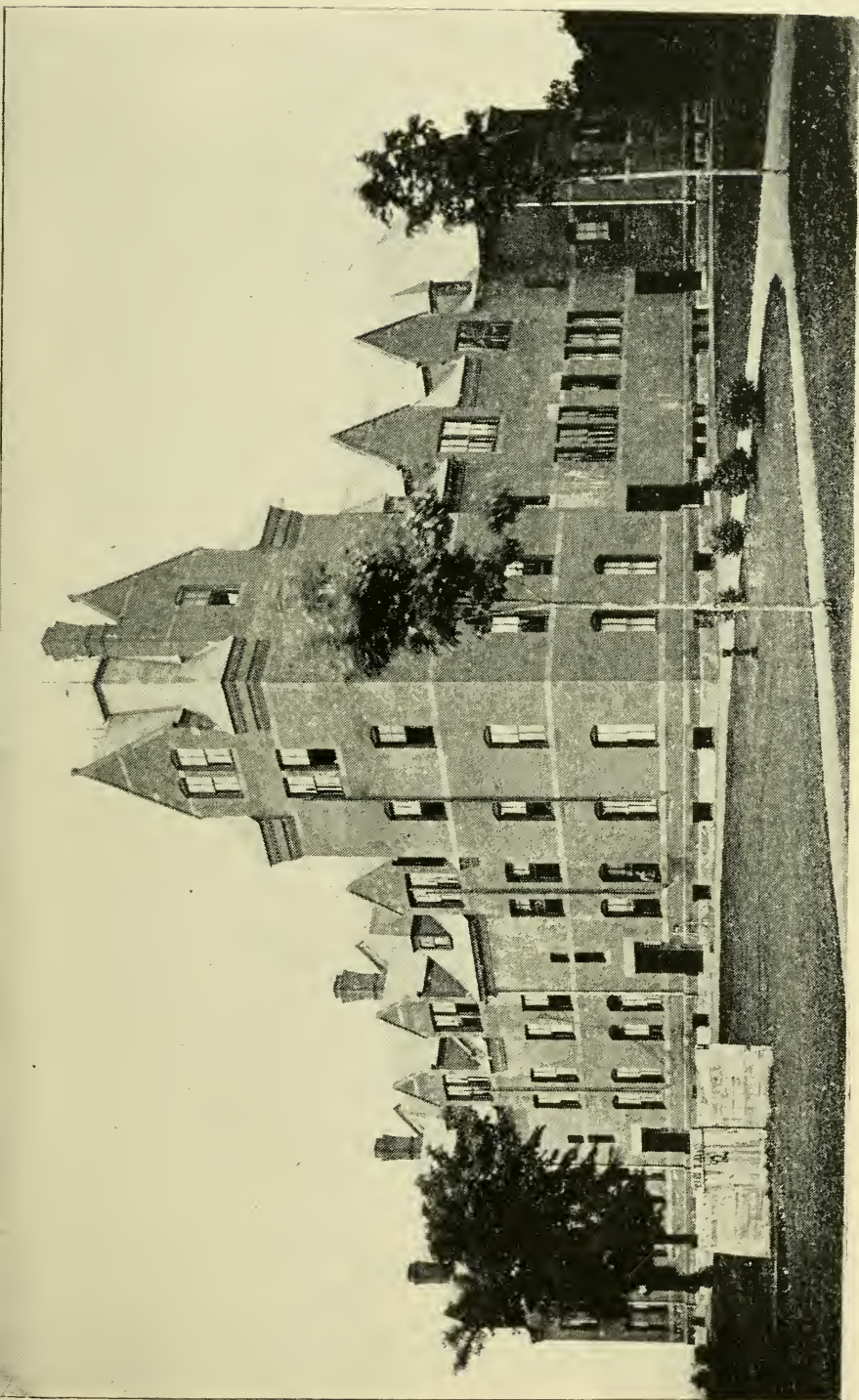
Chemical Laboratory (with fixtures)	\$15,000
Agricultural and Physical Laboratory (two)	12,000
Farmhouse	2,000
Barn and Feeding Stables (with fixtures)	6,000

The **Hatch Experiment Station** of the Massachusetts Agricultural College was organized in 1887 under the provisions of the Hatch act, which passed Congress and was approved by the President, March 2, of that year. The act established experiment stations in all the States and Territories of the Union, with the object of promoting “scientific investigation and experiment, and the principle and application of agricultural science.” For each station the annual appropriation of \$15,000 was granted ; of the first year’s income, not more than twenty per cent, and the years following, not more than five per cent, of this sum might be used for erecting buildings for the Station. The president of the Agricultural College, Henry H. Goodell, A.M., was elected director, and Frank E. Paige, of Amherst, treasurer of the Station, which positions they have held ever since. The departments of the Station, as now established, are Agriculture, Horticulture, Entomology, and Meteorology. The Station is always engaged in investigations important to the farmer and other classes in the State. Quarterly bulletins of about eleven thousand copies are issued. Of the annual income, \$5000 is paid by the Station to the chemical department of the State Experiment Station, where all the work of that kind is performed. The property of the Hatch Experiment Station is divided among the various departments as follows : —

Agricultural (barn)	\$4000
Horticultural (greenhouses)	2800
Entomological (insectary)	2000
Meteorological (apparatus)	1800

THE COLLEGE BUILDINGS.

The **Agricultural College** is situated on North Pleasant Street, about a mile from the village of Amherst. Lying upon the western slope of Mount Pleasant, it overlooks the entire Connecticut Valley,



Page 171.

THE SOUTH COLLEGE DORMITORY.

within the boundaries of the prehistoric lake. The extensive grounds are always admirably kept, and the buildings offer many things of interest to the visitor. The distance is convenient for a pleasant walk or drive, and as the institution has been considered by the leading agriculturists who have visited it from the United States and Europe, as the finest in this country, it certainly should not be neglected.

In making the tour of the college buildings, it will be found most convenient to enter the grounds by the way of Amity Street and Lincoln Avenue, or by North Pleasant Street, in either case commencing with the college barn, at the left, and following the course marked out in this book.

The first building to be noticed is the

College Barn, built in 1869, and altered to its present form in 1889; valued at \$14,500. The building contains the specimens used for illustration in the department of agriculture in the College. For this purpose there are typical specimens of farm stock, representing the different breeds of horned cattle and swine, a valuable stallion, and a small flock of sheep. The apparatus for farm work is very complete. The building is so neatly kept as to be attractive even to persons who have no special connection with agricultural affairs. In the management of the college farm it is intended to illustrate the systems and methods best suited to the conditions of this locality, and in all the operations the possible educational effect is kept prominently in view. While labor on the farm is not compulsory, not a little is performed by the students, and every opportunity is given to any who specially desire instruction in any particular line of farm work to obtain it. The dwelling-house adjoining the barn is occupied by the superintendent of the college farm and his assistants.

Some distance southward from these buildings, and just beyond the boundaries of the college grounds, is the D. G. K. Society house. This was bought in 1891, from Professor C. D. Warner, whose residence it was.

The next building is the

Drill Hall, erected in 1883, at an expenditure of \$6500, a legislative appropriation for the purpose. The Armory, at the right of the entrance, contains the arms furnished by the State to the college corps of cadets. The main hall is 123 feet long and 48 feet wide, and has an asphalt floor. It is heated by a hot-water system, introduced in 1888. This

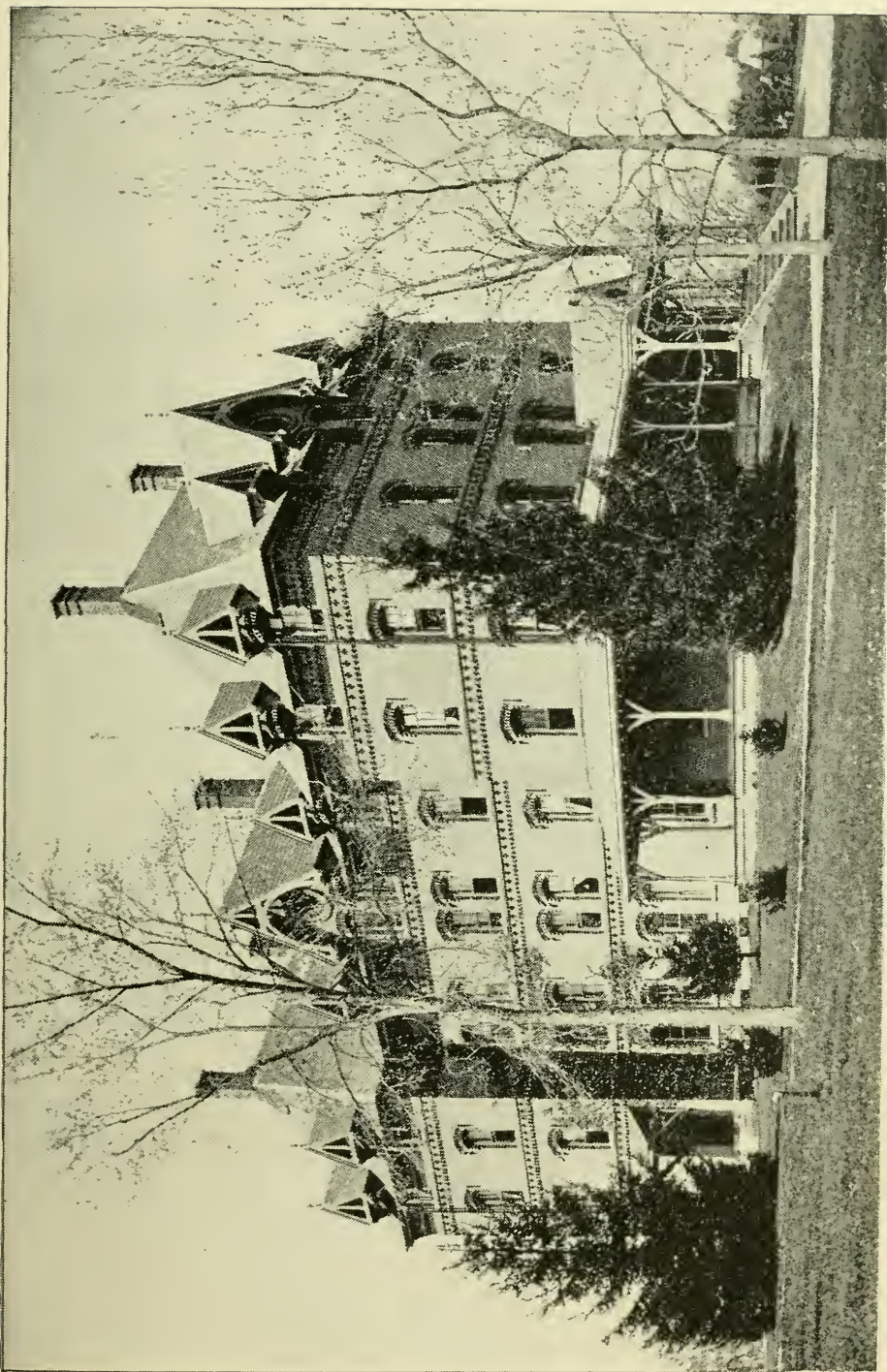
comfortable winter quarters of the corps is used by the students as a gymnasium. The second floor of the building contains the commandant's office, and a recitation room for the classes in military-tactics science. A short stairway leads into the tower of the building. On the campus adjoining this building are earthworks for use in mortar practice—a part of the regular military training of the College.

On the right is the

College Chapel, completed in 1886, at a cost of \$31,000, which was provided for the purpose by special legislative appropriations. The material used in construction is Pelham granite, with brownstone trimmings. The two entrances at the south end of the building lead into the alumni headquarters, and by winding staircases to the hall above. The college library occupies the main portion of the lower floor. This contained, in 1891, about ten hundred volumes, and its rate of increase during the past three years has been twelve hundred volumes annually. The president's office is situated on this floor. The second story forms a hall capable of seating six hundred people, and here the Sunday services of the College, and the commencement exercises are held. The building is heated by steam and lighted by electricity.

The **South College Dormitory**, beyond, was first built in 1867, and contained several recitation rooms and the college library. On February 4, 1885, it was destroyed by fire, and rebuilt in 1886, at a cost of \$37,000, a special appropriation by the legislature. The building is brick, three stories in height, and contains twenty suites of double rooms for students. The south wing overlooks the college campus and parade ground. In the north wing are recitation rooms and the museum of the biological department. The collection in this museum contains representatives of every type of American animal, and is valued at about \$3500. The office of the Hatch Experiment Station is in the tower of this building.

The meteorological observatory of the Hatch Experiment Station is also located in the tower. The observatory was established by money granted under the Hatch Experiment Stations act of Congress, and it is modelled as nearly as possible after the Central Park observatory in New York City. Observations were commenced by Professor C. D. Warner, the first and present director, on January 1, 1889. The instruments in use are all of the Draper self-recording pattern, which ordinarily require the attention of the observer not oftener than once a week.

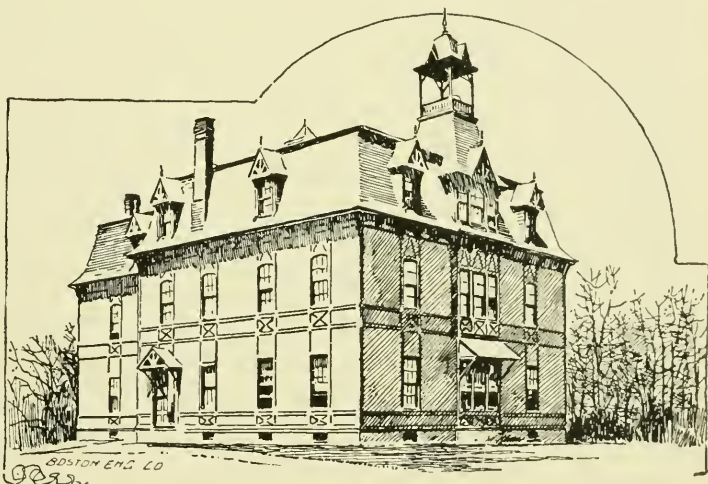


The most important of them is the electrograph, which was constructed after Professor Warner's design by Elliott Brothers, London, England. It measures the electric potential of the atmosphere, and keeps a record by a delicate and continuous photographic process. The instrument, when received by the observatory in October, 1890, was considered the most delicate and the most complicated ever constructed.

The instruments in the observatory, and their cost, are as follows: —

Electrograph.....	\$600
Mercurial barometer.....	250
Evaporimeter.....	240
Sun thermometer.....	175
Direction of wind.....	175
Force of wind.....	175
Rain-gauge.....	175
Thermometer.....	30

The meteorological department issues monthly and annual bulletins of its observations, and these are sent to any one who applies for them. In 1890 the monthly circulation of the bulletins numbered 400. Next is noticed the



The Laboratory Building.

North College Dormitory, completed in the fall of 1868. Its cost was \$36,000, and sixty-four students may be accommodated in it. The college reading-room is on the first floor.

Just behind this building is the

Laboratory Building, the first of the college buildings, erected in 1867. Originally a two-story building, it has been altered, now being valued at \$10,360. It now contains the chapel, used for morning prayers, the laboratory of the zoological department, and a part of the

chemical department, on the first floor ; the rooms of the mathematical, physical, and chemical departments, on the second ; and an interesting collection of agricultural implements from Japan in the third. This last story was formerly the drill hall of the cadet battalion, and is now used as a museum until a special building is erected.

Across the ravine is the residence of the college pastor, and next to it is a

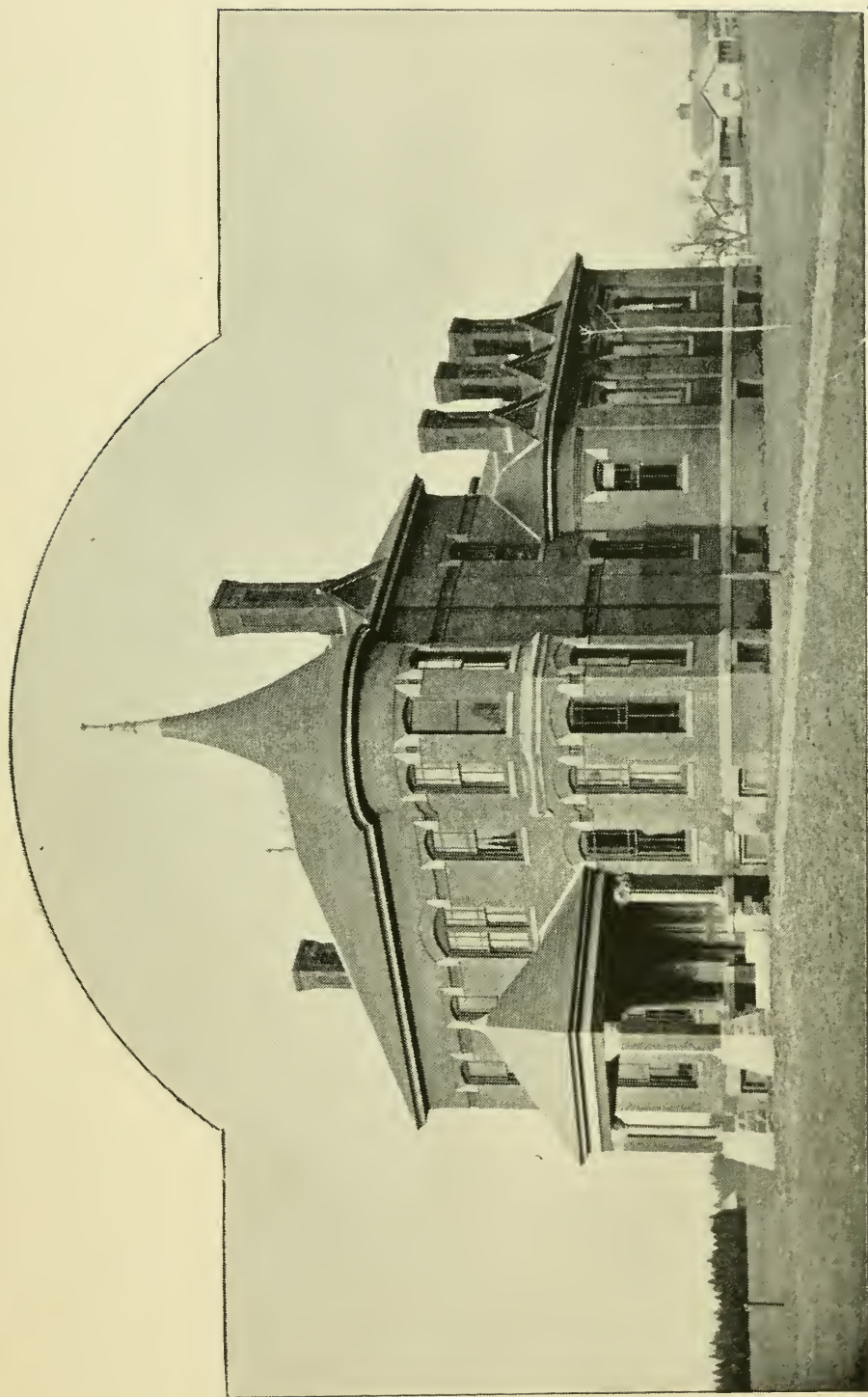
Boarding-House, built by the College in 1868, costing \$8000. For a number of years it was managed by the college authorities, but in 1891 was in the hands of a boarding-club of sixty students. The house accommodates the family in charge of the practical details.

The **Barn**, of the Hatch Experiment Station, is in the rear of the boarding-house. Built in 1889, and costing \$4000, it is used for experiments in feeding farm stock, and in other matters of importance to the farmer. The building was burned in the spring of 1891 and immediately rebuilt.

Following the road as it completes the circle of the college grounds, the visitor finds himself before the

Chemical Laboratory of the State Experiment Station, built of brick and sandstone. It faces to the south. The main building is two stories in height, measures 30 by 42 feet, and has a tower projecting from the southeast corner. Two parallel wings, each one story high and 32 feet long by 19 feet wide, join the rear of the building. The main house contains, on the ground-floor, the director's office, assistants' room, two small weighing-rooms, and passages leading into the wings, which are used as laboratories. Of the rooms on the upper floor, one is occupied by the assistants, and the other three are used for storing collections illustrating various agricultural industries. The building was erected in 1883, after plans suggested by the director, and made by E. A. Ellsworth, a graduate of the College. Its cost was \$15,000, including the apparatus it contains. Of this sum, \$11,500 was a legislative appropriation, the rest coming from the regular income of the Station. The entire chemical work of both the Massachusetts State and the Hatch Experiment stations is carried on in this laboratory.

The **Farmhouse** and barn of the State Experiment Station are situated about one hundred and fifty yards north of the chemical laboratory, and are valued together at \$8000. The house and main barn were built before the farm passed into the hands of the State, and has been re-



modelled from time to time since. Here resides the farmer of the Station, who is in general charge of the farm work under the superintendence of the director. The barn contains the seed-room, grain-room, silos, scales for weighing the crops, and live stock. In 1886 the feeding-stable and first wing were added, and shortly after another stable and wing of the same size were built in the rear of the first. Experiments in feeding and digestion that have been carried on here are among the most important to farmers of all that the Station has undertaken. A visit to the barn cannot fail to be of interest. Everything is kept in most perfect order and neatness. The buildings are subject to frequent change, depending upon the nature of the questions under investigation. The creamery attached to the barn was built in 1887, and the ice-house of one hundred tons' capacity was erected at the same time.

Just across the town-highway from the Chemical Laboratory stands the **Agricultural and Physical Laboratory** of the State Experiment Station, a brick building, two and a half stories high, with brownstone trimmings, and a frontage of forty feet, and a depth of thirty-five feet. This was the first building in this country erected for the special purpose of studying the more intricate questions of plant growth with reference to agricultural plants, and the relation of fungus growth to plant diseases. It was completed early in 1890, at a cost of \$10,000, appropriated by the State legislature. Its outfit cost nearly \$3000. The second floors are divided into four, of equal size each. The lower floor is devoted to microscopic investigations. It contains an office with two laboratories and a photographic studio, supplied with an overhead railroad for bringing large plants from the shed to the camera. The second story is occupied by the assistant superintendent of the field and feeding experiments. He has an office, and a chemical laboratory for studying the physiological condition of the soil, and a private apartment. In the rear of the building, and connecting with it, is a covered shed, twenty-five feet square; a glass house, of the same size; and a greenhouse, twelve feet wide, and forty feet long. From the open side of the covered shed, three parallel railways extend sixty feet on to the grounds. Within the shed are turn-tables and tracks, which lead into the glass house; and altogether they furnish a very convenient method of transporting the plants under investigation to and from the open air. This system of connecting shed and glass houses and photographic studio by

means of railways is modelled upon a plan used by Dr. Hellriegel, at Beruburg, Germany. The building was designed, in conformity with special instructions, by E. A. Ellsworth of Holyoke, a graduate of the College. It is maintained by a portion of the funds of the Hatch Experiment Station.

Following the college road as it turns again in the direction of the town, the dwelling-house at the right is the home of the professor of horticulture. Beyond is the

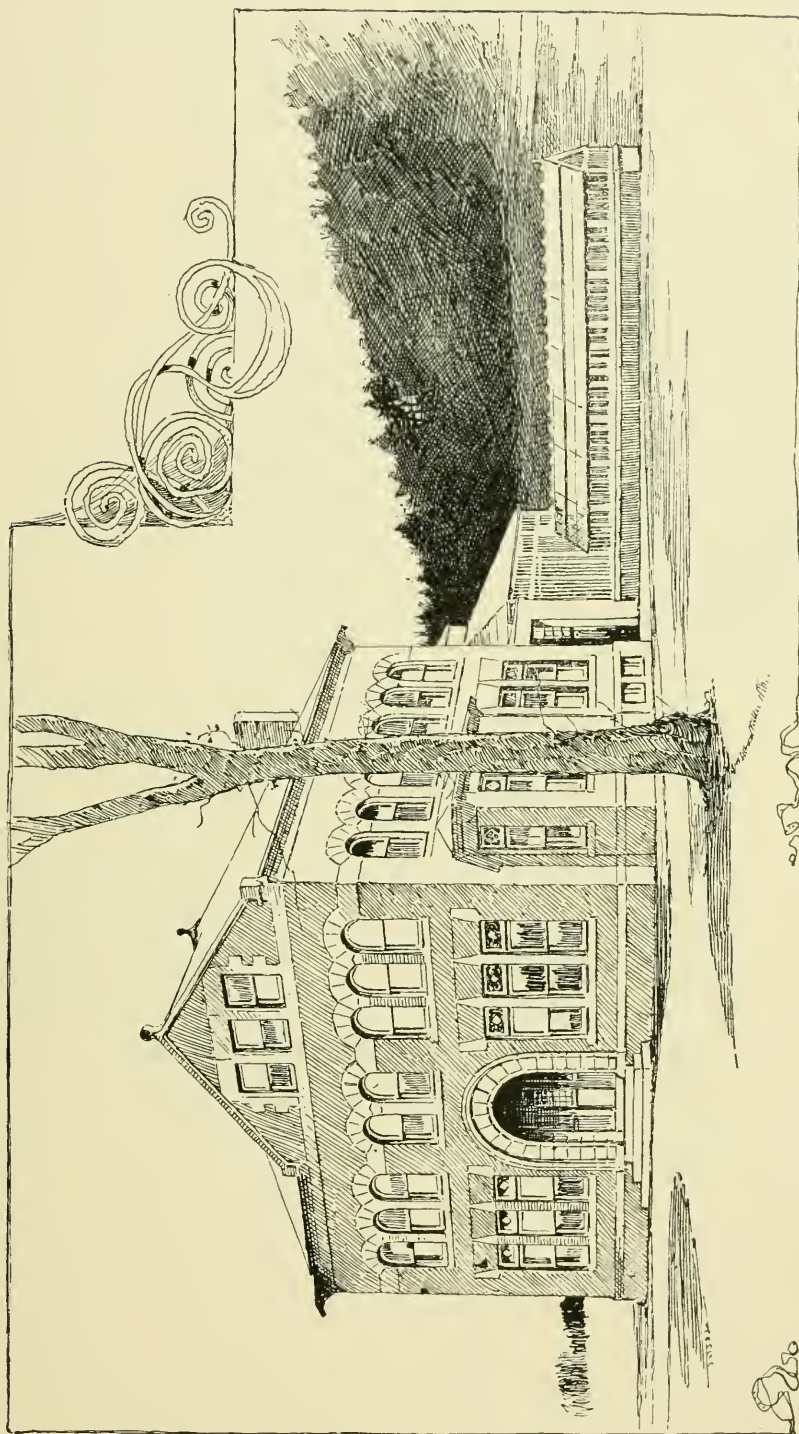
Botanic Museum of the College, built in 1866, at a cost of \$5180. It is a two-story frame structure, 43 by 45 feet, and was one of the four buildings erected about the time of the opening of the College. On the first floor is a laboratory and recitation room. On the floor above is the Knowlton Herbarium, collected by W. W. Denslow of New York, of fifteen thousand species, one of the finest collections in the country. A large collection of native woods, and fifty specimens of wood from the Himalaya Mountains, made by the celebrated travellers, the Von Schlagentwelt brothers, are also kept in this room. One of the most interesting objects in the room is a cast of a mammoth squash, grown in the plant house in 1873, which actually lifted, in the course of its growing, a weight equal to forty-five hundred pounds, and for some days after an accidental cracking of the shell supported five thousand pounds. The office of the college treasurer is in this building, his hours being from four to five o'clock one or two afternoons of each week.

The neighboring stable was built in 1885 for the use of the horticultural department of the College, cost \$1500, and is conveniently arranged for the use of the department.

The **President's House**, on the hill-side, was built in 1884 for the use of President Greenough, and cost \$11,500. It is still the property of the College, and occupied as a residence by W. P. Brooks, professor of agriculture.

On the land between this building and the stable, the horticultural department makes experiments in growing small fruits and berries. A fine vineyard is at the north of the president's house, and a large peach orchard and a nursery at the east. These contain many of the finest varieties of vines and trees, which are cultivated entirely for experiment.

The **Durfee Plant House**, a gift of the late Dr. Nathan Durfee of Fall River, at one time treasurer of the College, was built in 1868 at an expense of \$12,000. On January 23, 1883, the house was partially



Page 183.

THE AGRICULTURAL AND PHYSICAL LABORATORY.



destroyed by fire, but was immediately rebuilt, and is now valued the same as originally. The main house consists of an octagon, 40 feet in diameter, and two wings each 60 feet long and 30 wide. A workroom in the rear of the octagon communicates with two parallel pits each 50 feet long. A small wing, 24 by 16 feet, opens from the northeast corner of the octagon. The main house contains many types of plants for illustration and educational purposes. These are provided from the



The Insectary.

income of a \$10,000 fund, the gift of the late Leonard M. Hills and his son Henry F. Hills, of Amherst. The pits and the small wing are used for growing marketable plants and flowers.

The **Greenhouse** of the Hatch Experiment Station was constructed in the fall of 1888, after special plans devised by Professor S. T. Maynard, the head of the horticultural division. Completely fitted, it cost \$2800, and is designed for experiments in plant-growing, with different methods of heating. There is a main room, containing the heating apparatus, and two parallel greenhouses of exactly the same size and construction, extending from the south side. One of them is heated by steam, and

the other by hot water. Valuable investigations are made here each winter, and the results widely published.

The grounds at the south of this group of buildings is used by the horticultural department for experiments in fruit and ornamental tree-culture. The farmhouse on the opposite side of the road is one of the buildings bought with the land at the time of the establishment of the College. The small building at the left is the

Insectary of the entomological department of the Hatch Experiment Station, built in 1889. The expense of its construction, \$2000, was met by the Agricultural College and the Massachusetts Society for the Promotion of Agriculture. The investigations of this department relate to the life and habits of insects injurious to vegetation, and are under the direction of the State entomologist, Professor Charles H. Fernald. The building is a story and a half high, 28 by 20 feet in area, and has adjoining it a greenhouse 30 feet long and 18 wide. The ground-floor contains the entomologist's office, a laboratory, and an "insecticide room," where the various compounds for killing insects are tested. The laboratory occupies the entire half of the floor adjoining the greenhouse. This latter is divided into a hot room and a cold room, which are used for breeding insects. In the cellar of the main house are vaults for wintering such insects as may be under investigation. It was in this building that the extended investigations of the gypsy moth, for the destruction of which the State has expended much money, were first made. The department is constantly receiving queries from all over the country, principally this State, however, in regard to the destruction of common and injurious insects.

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